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The Finnish Space Act: En Route to Promoting Sustainable Private Activities in Outer Space

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Prompted by the new space activities, the Government of Finland has promulgated its first national space law setting conditions for operators concerning inter alia *licensing, registration and liability for their space activities. This article looks at the legislative process leading to the Space Act and provides an overview of the Finnish Space Act in the light of the international obligations of a State. Moreover, issues concerning sustainable uses of outer space and international soft law instruments in the context of national licensing will be discussed.*

1 INTRODUCTION

At the beginning of the centennial celebrations of the State of Finland, five launches of small satellites were envisaged by Finnish non-governmental operators. This sudden interest in space activities was not completely unexpected as Finland has for almost thirty years taken part in the European Space Agency (ESA)[1] projects, and hosts strong expertise in information and telecommunications technologies, as well as a vivid start-up community. The planned upstream space activities however, meant that the Finnish Government needed to set up a legal framework to authorize and supervise the space activities in accordance with its international obligations, as well as try to distribute any compensation paid under its international obligations to the private operators carrying out the activities, those efforts eventually resulting in the Act on Space Activities ('Space Act').[2] As things were advancing very quickly in terms of the first Finnish space projects, it

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1 Finland has been an associate member of ESA since 1987, and a full member since 1995, taking part in several of ESA's optional space programmes. In the same year as its ESA membership, Finland also joined the European Union (EU).

2 Laki avaruustoiminnasta (63/2018); The rationale behind the Space Act was similar to those of other States enacting national legislation concerning space activities, *see* Irmgard Marboe, *National Space Legislation*, in *Outer Space in Society, Politics and Law* 440 (C. Brünner & A. Soucek eds, Wien: Springer-Verlag 2011).

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was decided that the Space Act would be created within less than one year. This tight time schedule was possible firstly because the Government was eager to move forward with the drafting process to avoid lengthy periods of time during which rules at national level were not clear, but also because many existing international resources as guidelines for best practice were available to be utilized in the legislative process. In addition to the ambitious target, certain guiding principles for the new laws were recognized by the Government – the law would try to undertake a careful balancing exercise between the State's obligations and promotion of private activities, but it would also try in addition to limit the State's liabilities, and to advocate a sustainable and environmentally responsible approach to space activities.

2 THE FINNISH SPACE ACT: BACKGROUND

The Government's Proposal[3] is comprised of four distinct elements: it adopts the provisions of the Registration Convention,[4] sets out the rules concerning space activities, repeals the existing Act on the return and rescue of astronauts and the return of space objects,[5] and amends the Act on lost and found objects.[6] This article focuses on the second element, the Space Act, only briefly mentioning the other elements, as the focus is on space activities. The explanatory note of the Space Act included in the Government's Proposal acts as an explanatory and supplementary guideline for the application and use of the Space Act ('Explanatory Note').

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[3] Hallituksen esitys eduskunnalle avaruuteen lähetettyjen esineiden rekisteröinnistä tehdyn yleissopimuksen hyväksymiseksi ja voimaansaattamiseksi sekä laeiksi avaruustoiminnasta ja löytötavaralain 2§ muuttamisesta (157/2017) ('Government's Proposal').

[4] Convention on Registration of Objects Launched into Outer Space ('Registration Convention'), adopted 12 Nov. 1974, opened for signature 14 Jan. 1975, entered into force 15 Sept. 1976; 1023 UNTS 15.

[5] In fact, the Space Act was not the first Finnish space-related legislation as, prior to the Space Act, at the time of ratifying the Rescue and Return Agreement, a compact piece of legislation concerning the rescue and return of astronauts and return of space objects was made: Laki avaruuslentäjien pelastamisesta ja palauttamisesta sekä avaruusesineiden palauttamisesta (5 Aug. 1970/616) ('Act on Rescue and Return') . Its six articles mainly deal with operational requirements in case a person encounters a space object or an astronaut. However, the Act on Rescue and Return also deals with compensation for damage caused by a space object, launch vehicle, or their component part, or by an astronaut during a mission, to a person or property, or which is due to operational activities required within the scope of application, such as the requirement to give notice of a spacecraft in distress or help astronauts in an emergency situation. The Act on Rescue and Return was repealed at the same time as the Space Act entered into force. The provision concerning compensation for damage is addressed in Art. 7 of the Space Act, and shall be dealt with in this article in connection with the State's liability and right of recourse, as specific mention to this law is made in the Explanatory Note in connection to Art. 7 of the Space Act.

[6] Löytötavaralaki (778/1988).

2.1 The relevant international framework applicable to Finland

Finland has ratified three of the United Nations (UN) treaties on outer space, namely the Outer Space Treaty,[7] the Liability Convention,[8] and the Rescue and Return Agreement.[9] Simultaneously with the Space Act, Finland shall accede to the Registration Convention.[10]

The Outer Space Treaty includes the main principles for the use and exploration of outer space, including the requirement that the States authorize, continuously supervise and ensure that space activities, including those of the non-governmental entities, are carried out in accordance with international law. The Outer Space Treaty also sets the basic principles for liability over damage caused by space objects as well as their registration, these principles being further elaborated in the Liability and Registration Conventions. As of today, there are currently to the author's knowledge no plans for Finland to ratify the Moon Agreement.[11] Finland has applied for membership to the UN Committee on Peaceful Uses of Outer Space (COPUOS).[12]

2.2 Decentralized space governance

The Ministry of Economic Affairs and Employment ('Ministry') coordinates matters relating to space regulation, but the responsibilities are divided within the Government administration between many actors in accordance with the subject matter.

The coordinating body within the field of Finnish space activities has been the Space Committee, which is an advisory body working under the auspices of the Ministry.[13] The Space Committee's main tasks are to create the Finnish Space

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7 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies ('Outer Space Treaty'), adopted 19 Dec. 1966, opened for signature 27 Jan. 1967, entered into force 10 Oct. 1967; 610 UNTS 205.

8 Convention on International Liability for Damage Caused by Space Objects ('Liability Convention'), adopted 29 Nov. 1971, opened for signature 29 Mar. 1972, entered into force 1 Sept. 1972; 961 UNTS 187.

9 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space ('Rescue and Return Agreement'), adopted 19 Dec. 1967, opened for signature 22 Apr. 1968, entered into force 3 Dec. 1968; 672 UNTS 119.

10 Outer Space Treaty, Liability Convention, Return and Rescue Agreement, and Registration Convention hereinafter together ('UN Space Treaties') referring to those UN space treaties to which Finland is a State party.

11 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies ('Moon Agreement'), adopted 5 Dec. 1979, opened for signatures 18 Dec. 1979, entered into force 11 July 1984; 1363 UNTS 3.

12 COPUOS, Legal Subcommittee, *Application for Membership of the Committee on the Peaceful Uses of Outer Space: Finland* (A/AC.105/C.2/2018/CRP.5).

13 Asetus avaruusasiainneuvottelukunnasta (288/1992).

strategy and monitor its implementation. The Space Committee is comprised of various stakeholders within the Government as well as the private space sector through the involvement of the Finnish Defence and Aerospace Industries.[14] The current Finnish Space Strategy is set for years 2013–2020[15] ('Space Strategy'). In accordance with the Space Strategy, the aim is to become a leader in the Arctic space solutions and utilize space data in downstream applications. As the Space Strategy was drafted before the beginning of the novel upstream activities, the policy concentrates mainly on international cooperation through ESA projects. However, Business Finland has recently published plans for a NewSpace Economy programme[16] which, together with the ESA Business Incubation Centre activities, is foreseen to promote both domains of activities.

The Space Act itself does not propose any changes to the current Finnish space governance, but there are other initiatives to examine the possibilities and models of setting up more centralized space governance in order to coordinate national space activities and support the growth of the local industry.[17] Also, the role of the Space Committee will likely need to be addressed as the powers to license and supervise space activities are in accordance with the Space Act vested in the Ministry, leaving the role of the Space Committee to be determined.

2.3 The first space activities: need for national space law?

The novel upstream activities that sparked the need for national space law were small satellite missions, planned mainly for technology demonstration purposes. These first activities were envisaged by academic institutions and small private enterprises. The very first satellite to be launched was Aalto-2 in May 2017 built by Aalto University, but this was not technically a Finnish satellite, as it formed part of the European QB50 mission,[18] and the satellite was registered by Belgium. Its sister satellite, Aalto-1, launched in June 2017, was then the real precursor of the Finnish space activities. It is also the very first Finnish space object to be registered in the national registry of space objects.[19] Other Finnish operators were planning three

[14] Association of Finnish Defence and Aerospace Industries, http://www.afda.fi (accessed 26 Oct. 2017).
[15] Ministry of Economic Affairs and Employment, *Finland's Space Strategy for Years 2013–2020 – To Space with Europe – Global Benefits and Prosperity to Finland*, https://Ministry.fi/documents/1410877/3437254/Finlands+Space+Strategy+for+years+2013+2020+27102014.pdf (accessed 5 Sept. 2017).
[16] Business Finland, *NewSpace Economy – Programme*, https://www.businessfinland.fi/en/for-finnish-customers/services/build-your-network/arctic/new-space-economy/ (accessed 26 Apr. 2018).
[17] Ministry of Transport and Communications, *Request for Opinion*, https://www.lvm.fi/lausuntopyynnot/-/mahti/asia/75733 (accessed 7 May 2018).
[18] QB 50 European Project, https://www.qb50.eu (accessed 11 Oct. 2017).
[19] Ministry, *Registry of Space Objects*, http://tem.fi/documents/1410877/3227301/Registry+of+Space+Objects+Finland/49294499-bc8a-4e17-bf56-7f83a95bffb4/Registry+of+Space+Objects+Finland.pdf (accessed 26 Apr. 2018).

further small satellite launches before the year-end, but the launches were delayed. With the current activities, Finland fits perfectly in the profile of a new spacefaring state prompted to enact national law due to scientific and technology demonstration nanosatellite projects.[20]

One of the supporting arguments for the Space Act was that most of the other Nordic countries, namely Norway, Sweden, and Denmark already had legal regimes governing national space activities.[21] Norway was in fact the first European country to enact its space act.[22] The Swedish Act on Space Activities is from 1982.[23] The Danish Outer Space Act,[24] as the most recent addition to the national space laws, provided greater inspiration to its Finnish counterpart due to the similar profile of the current national space activities.

3 TOWARDS THE FIRST NATIONAL SPACE LAW

3.1 Working group for national space law

On 16 January 2017 the Minister for Economic Affairs set up a working group for national space law.[25] In accordance with the mandate, the Space Act and its preparatory work, including the Parliamentary review and any resulting changes, should be completed by the end of the year 2017.

The members of the working group together formed a diverse circle with expertise in space science, technology and law. What is more, the comments and concerns of the operators were heard already at the time of the drafting as industry and academia representation was also welcomed in the working group. Involving the various stakeholders and the users of the legislation can be said to increase the possibilities that the resulting law meets the expectations and the practical situations the operators are facing.

It was decided early on that the new law would closely follow the experiences of peer states in similar situations, especially Denmark and Austria,[26] and that the building

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[20] Neta Palkovitz & Tanja Masson-Zwaan, *Orbiting Under the Radar: Nano-Satellites, International Obligations and National Space Laws*, in *Proceedings of the International Institute of Space Law 2012* 566 (C. M. Jorgenson ed., Den Haag: Eleven International Publishing 2013).

[21] Also Iceland can be considered a Nordic country. Iceland does not currently have a national space law.

[22] Act on launching objects from Norwegian territory etc into outer space, No. 38 (13 June 1969).

[23] Act on Space Activities, 1982:963 (18 Nov. 1982).

[24] Outer Space Act, Act no. 409 of 11 May 2016, entered in force 1 June 2016.

[25] Ministry, *Working Group to Prepare National Space Legislation*, https://tem.fi/artikkeli/-/asset_publisher/tyoryhma-valmistelemaan-kansallista-avaruuslainsaadantoa?_101_INSTANCE_KbgSvtizPgsM_languageId=en_US (accessed 25 Oct. 2017).

[26] Austrian Federal Law on the Authorization of Space Activities and the Establishment of a National Space Registry (Austrian Outer Space Act) of 6 Dec. 2011, entered into force on 28 Dec. 2012.

blocks created within Project 2001+[27] as well as the Sofia Model Law[28] would be utilized to the extent possible. Correspondingly, the secretariat of the working group was active in reaching out to colleagues both in other ESA Member States, to gain comparative understanding on the other national space laws, as well as to the ESA Legal Services Department for the most current advice on drafting of national space laws. The secretariat also interviewed various external experts such as specialists in space debris mitigation and third party liability insurance experts.

3.2 Transition of the on-going Finnish space activities started prior to the promulgation of the Space Act

In accordance with the Explanatory Note, prior to the Space Act being in force and when no provisions mandating the application for a license or governing information sharing with the Government existed, the Ministry agreed with the known operators on submission of an informal risk analysis. It can be said that this approach is only available in a relatively small country where the Government knows the potential operators and dialogue can easily be organized. Any review process carried out on such informal basis however, remains legally unofficial.

Those operators having launched their space missions prior to the Space Act became effective, would then, in accordance with Article 22 of the Space Act, have a twelve month transition period to apply for an official license. Taking into account that the licensing conditions set out in Article 5 of the Space Act include more elements than a mere provision of a risk analysis, at least on a theoretical level, there is a possibility that an operator of an on-going mission is not granted a license under the Space Act. However, especially taking into account the profile and the length of the missions launched prior to the Space Act became effective, this will not likely cause any real life problems, but rather it may be that the operators will find it easier to go through the licensing process after having already encountered some of the issues during the informal process.

3.3 Towards the final form

The ambitious timeline set for the working group was achieved: the Government's Proposal was passed by the Ministry to the Parliament on 26 October 2017.

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[27] COPUOS, Legal Subcommittee, *Information on the activities of international intergovernmental and non-governmental organizations relating to space law, Project 2001 Plus building blocks for national space laws* (A/AC.105/C.2/2013/CRP.6).

[28] Sofia Guidelines for a Model Law on National Space Legislation of the International Law Association (ILA), adopted by the 75th ILA Conference on 30 Aug. 2012 as resolution 6/2012 ('Sofia Model Law').

Consequently, the responsibility to review the draft Space Act was allocated to the Commerce Committee, which considers a broad scope of matters, now also including space related issues. Additionally, the Transport and Communications Committee[29] was requested to deliberate on the matter and pass on its statement to the Commerce Committee. It was already noted in the preliminary stage that space related issues raised various topics among the parliamentarians; the responsible minister was asked inter alia about space debris, the Space Strategy, the possibility of having a Finnish astronaut, as well as issues relating to the State's critical assets, and the EU Copernicus programme.[30]

After the Parliament had approved the Government's Proposal on the Space Act with minor modifications, the Space Act was signed by the President and entered into force on 23 January 2018.

4 GENERAL OVERVIEW OF THE PROVISIONS OF THE SPACE ACT

The Space Act encompasses the most typical issues in any national space law, namely the scope of application, the licensing process and its requirements, the registry for space objects, liability and insurance, as well as consequences of breach of license. What can be viewed as progressive is its positive approach to environment and space sustainability. The Space Act includes specific references to space debris mitigation and highlights the importance of environmental issues in outer space and on Earth. Also, it can be said to have a forward looking approach under the catch-all definition of space activities, allowing for new technologies and missions to be licensed under its framework. On that account, the topical issue of space resource mining was addressed by the working group, and it was considered that the current definition of space activities could in theory include such an activity, however in case an application for a license with a purpose to extract minerals in outer space would be made under the Space Act, the Ministry would need to consider whether it deems such activity to be in accordance with its international obligations and whether it is perceived to have jurisdiction over the subject matter in the context of a national license application.[31]

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[29] As many of the other members of the working group, the author was heard by the Committee on 21 Nov. 2017; The Finnish Parliament, *The Statement of the Transport – and Communications Committee (*LiVL 28/2017); The Finnish Parliament, *The Report of the Commerce Committee* (TaVM 23/2017).

[30] The Finnish Parliament, *Preliminary Debate* (7 Nov. 2017), https://www.eduskunta.fi/FI/vaski/PoytakirjaAsiakohta/Sivut/PTK_113+2017+3.aspx (accessed 9 Nov. 2017).

[31] Space Act Art. 5.5; *see* e.g. various presentations in the IISL/ECSL Symposium on *Legal Models for Exploration, Exploitation and Utilization of Space Resources 50 Years After the Adoption of the Outer Space Treaty* during the during the COPUOS Legal Subcommittee (27 Mar. 2017), http://www.unoosa.org/oosa/en/ourwork/copuos/lsc/2017/symposium.html (accessed 9 Oct. 2017); International Institute of Space Law Directorate of Studies, *Background Paper on the topic: Does International Space*

4.1 The authority responsible for authorization and supervision

In accordance with Article 2 of the Space Act, the Finnish space activities are monitored, managed and supervised by the Ministry. It is also the authority responsible for overseeing the licensing process and supervising the national registry of space objects.

The Space Act grants the Ministry competence to issue an implementing decree to elaborate upon certain provisions of the Space Act.[32] Issues addressed in the Decree relate to operational issues concerning the licensing and registration process. Additionally, the Ministry is planning to create administrative guidelines for operators to clarify the processes relating to the licensing of space activities.

4.2 National registry for space objects

In accordance with the Government's Proposal, Finland acceded to the Registration Convention on 15 January 2018 and the provisions of the Registration Convention were transposed into Finnish law, meaning that the provisions of the Registration Convention were translated and included as such in the national law.[33]

The practical measures mandated by the Registration Convention are adopted by the Space Act and the Decree. Article 6 of the Space Act states that the national space objects registry shall be maintained by the Ministry and it is placed in the public domain. In accordance with the Explanatory Note, the registry is accessible on the Internet.[34] Finland also requests the operators to submit supplementary information in accordance with the UN recommendations.[35] In accordance with Article 4 of the Decree, operators have to submit the information required in Article 6 of the Space Act within one month from the launch of the space object, and in accordance with Article 12 of the Space Act, operators have a continuous obligation to supply updated information during the mission, such as information on the specific time of the launch and detailed information on the orbital parameters.

Law Either Permit or Prohibit the Taking of Resources in Outer Space and on Celestial Bodies, and How Is This Relevant for National Actors? What Is the Context, and What Are the Contours and Limits of This Permission or Prohibition?, http://iislweb.org/docs/IISL_Space_Mining_Study.pdf (accessed 9 Oct. 2017); Philip de Man, *Luxembourg Law on Space Resources Rests on Contentious Relationship with International Framework*, https://ghum.kuleuven.be/ggs/publications/working_papers/2017/189deman (accessed 9 Oct. 2017).

32 Asetus avaruustoiminnasta (23 Jan. 2018/74) ('Decree').

33 Laki avaruuteen lähetettyjen esineiden rekisteröinnistä tehdystä yleissopimuksesta (62/2018); Valtioneuvoston asetus avaruuteen lähetettyjen esineiden rekisteröinnistä tehdystä yleissopimuksesta (73/2018).

34 Ministry, *supra* n. 19.

35 UN General Assembly, *Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects* (10 Jan. 2008) (A/RES/62/101).

The Explanatory Note recognizes that the registration of space objects is an important principle in the international space regime. It further notes a more practical need to impose regulation in this field, namely that many launch service providers require a space object to be launched to be registered in the national registry of the customer. Thus, both accession to the Registration Convention and the establishment of a national registry support the aims of the Space Act in encouraging the national space activities. Additionally, in accordance with the Explanatory Note, the national registry is divided in two parts: it is to include the space objects for which Finland is the State of registry or launching State, and a listing of those space activities for which Finland considers itself the appropriate State in accordance with Article VI of the Outer Space Treaty. Thus, the national registry will include information on an in-orbit satellite becoming under the 'effective control' of a Finnish operator for example through a sale of assets irrespective of the satellite being included in any other State's registry.

5 THE MOST IMPORTANT PROVISIONS OF THE SPACE ACT

5.1 Scope of application: space activities

5.1[a] *Scope of application*

In accordance with Article VI of the Outer Space Treaty, a State bears international responsibility for national space activities in outer space, even if those activities are carried out by non-governmental entities. The appropriate State shall authorize and continuously supervise the national space activities and ensure their compliance with international law. As the Outer Space Treaty does not specify the contents or the application of this provision, it is largely left for the States to interpret how these obligations are to be met in national laws.

Finland has chosen to adopt a rather broad approach to the nationality of space activities: the licensing regime is based on its application of the territoriality, personal and quasi-territorial jurisdiction principles.[36] Correspondingly, in accordance with Article 1, the Space Act applies to activities in outer space carried on in the territory of Finland as well as to activities carried on outside the territory on board a vessel or an aircraft registered in Finland, and to activities by a Finnish citizen, or a legal person domiciled in Finland.[37] With regard to the 'in outer

[36] Under general international law, a State has jurisdiction over its territory and its nationals, and more broadly over activities of nationally registered objects, *see* Michael Gerhard, *Article VI of the Outer Space Treaty*, in *Cologne Commentary on Space Law ('CoCoSl')* vol. I, 112–114 (S. Hobe, B. Schmidt-Tedd & K-U. Schrogl eds, Köln: C. Heymanns 2009); Bin Cheng, *Article VI of the 1967 Space Treaty Revisited: 'International Responsibility', 'National Activities' and 'the Appropriate State'*, 26(1) J. Space L. 7, 24 (1998).

[37] It should be noted that in accordance with Art. 3 of the Space Act, not all the provisions of the Space Act are applicable to the Finnish Defence Forces.

space' condition in the Article VI of the Outer Space Treaty, the Space Act does not define 'outer space', unlike the Danish Outer Space Act,[38] but reference is made in the Explanatory Note to the international discussion, with specific reference to the question arising in connection with sounding rockets.

5.1[b] *The licensee*

With regard to the scope of application, Article 4 of the Space Act states that an 'operator' is a natural or legal person who carries out or intends to carry out space activity or who has effective control over the activity. Further the Explanatory Note recognizes the definition to include launching of a space object, procurement of a launch of a space object or responsibility for operation and control of a space object.

What is noteworthy is that the definition of an operator does not merely refer to an actor carrying out space activities, as is the case in the Sofia Model Law.[39] In contrast, the definition of an operator in the Explanatory Note includes some of the substantial elements of the definition of space activities outlined in the below section, such as 'procurement of operation and control', thus making the definition of an operator an integral part of the interpretation of national space activities in accordance with the Space Act.

5.1[c] *Space activities*

The Outer Space Treaty leaves open which activities are to be considered as space activities.[40] In accordance with Article 4 of the Space Act and the Explanatory Note, space activities requiring a license include launch of a space object, procurement of a launch, operation and control of a space object and procurement of operation and control of a space object, and the return of a space object to Earth.

Launching and procurement of launch is rather self-explanatory. As there are currently no launch capabilities in Finland, in accordance with the Explanatory Note, procuring a launch from a service provider abroad is considered as a space activity requiring a license under the Space Act, even if it is a private entity procuring the launch. Consistently, Finland considers itself in such event as one

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[38] The Danish Outer Space Act states in Art. 4.4 that, '"Outer space" means: Space above the altitude of 100km above sea level'.

[39] Sofia Model Law, Art. 2.

[40] Outer Space Treaty Article VI; *see* e.g. Gerhard, *supra* n. 36, at 109–100; Frans G. von der Dunk, *The Origins of Authorisation: Article VI of the Outer Space Treaty and International Space Law* 4–8, http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1068&context=spacelaw (accessed 15 Nov. 2017).

of the launching States under international space law even if some other States have adopted a different interpretation of the underlying international regime.[41] Also, in accordance with the Explanatory Note, operating a launch facility would be caught by the Space Act, thus extending its reach to purely terrestrial activities.[42]

Concurrently, a license is required in case the operator has operation and control over the space object or, in accordance with the Explanatory Note, procures such operation and control. 'Operation and control' is a concept also used in various other national space laws.[43] In accordance with the Explanatory Note, the first part of the concept, 'operation', refers to placing the space object in orbit, its use and the conduct of operations in space. 'Control' on the other hand includes application of 'other control' over the space object such as reacting to collision warnings and seizing operations. In accordance with the Explanatory Note, mere receipt of satellite services would not count as procurement of operation and control, as 'effective control' will be required.

Even if separate activities may be deducted from the above definition of space activities, it is predicted that taking into account the current Finnish space activities, the usual license application will include both procurement of launch as well as the resulting operation and control of a space object in outer space. This one license approach also paves the way for new trends in the space sector as it is submitted in the Explanatory Note that in the future, a license could be granted for multiple satellites by the same operator provided that such satellites form one system, the critical qualities of which are already put forward in the initial application. How this will be done in practice will have to wait for the first actual constellation license application.[44]

5.1[d] *Space object*

The definition of a space object is closely linked to the concept of space activities. Without a space object there usually cannot be any space activities. The definition

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41 Explanatory Note Arts 1 and 4; *see* e.g. Tanja Masson-Zwaan, *Registration of Small Satellites and the Case of Netherlands* in *Small Satellites: Regulatory Challenges and Changes* 187–194 (I. Marboe ed., Brill 2016).

42 Similarly s. 2(1) of the Austrian Space Act; Frans G. von der Dunk, *Another Addition to National Space Legislation: The Austrian Outer Space Act in Proceedings of the International Institute of Space Law* 649 (C. M. Jorgenson ed., Eleven 2012).

43 Gerhard, *supra* n. 36, at 109; for an overview of the different provisions in different national space laws concerning operation and control, *see* e.g. Frans G. von der Dunk, *The Legal Framework for Space Projects in Europe: Aspects of Applicable Law and Dispute Resolution*, in *Contracting for Space: Contract Practice in the European Space Sector* 358–360 (L. J Smith & I. Baumann eds, Ashgate 2011).

44 Considering the present-day Finnish space activities, a constellation license or an application for such will likely have to wait for some time, however it may become a reality in the future, a Finnish company 'Iceye', which launched its first satellite X-1 in Jan. 2018, has publicly announced its aim to launch a constellation of Synthetic Aperture Radar (SAR) – microsatellites for earth observation purposes in the coming years, *see* e.g. https://www.iceye.com/technology (accessed 27 Dec. 2017).

of space object in Article 4 of the Space Act follows the Sofia model law closely, stating that a space object means any object launched or intended to be launched into outer space, including component parts of such an object, and any device used or intended to be used for launching an object to outer space.[45] Taking into account that the Finnish space industry has been traditionally based on supply of component parts in international missions, it was deemed necessary to clarify in the Explanatory Note that the obligations stated in the Space Act do not apply to suppliers of component parts to a space object. The regime applies to the operator, not to a commissioned manufacturer or a supplier of components or subsystems.

5.2 Authorization and supervision of national space activities

Taking into account that the State bears international responsibility for national space activities and primary international liability for damage caused to third parties by its space objects, it is in the interest of the State engaging in space endeavours through licensing private activities to ensure that those activities are carried out by reliable operators, at the least possible level of risk. Consequently, it is stated in the Explanatory Note that minimizing the State's risks was one of the objectives of the Space Act.

With this aim, Article 5 of the Space Act includes the basic preconditions for a license.[46] First, the operator needs to possess necessary qualifications with regard to reliability, technical expertise and financial capacity to be able to carry out activities in outer space from start to finish. As space activities are by nature ultra-hazardous, damage may occur. Therefore, it is crucial from the State's risk management point of view, having the primary international responsibility to compensate for damage, to ensure that the licensed operators are reliable, knowledgeable and have sufficient financial standing to maintain good standards throughout the mission. These required qualities need to be juxtaposed with the planned mission, meaning that the requirements shall be proportional and adopt a holistic approach towards the qualities needed. This is especially relevant for small start-up companies, as they may not be able to show long track record of financial stability but their technical and operational knowledge of the mission may be considered to be sufficient to fulfil the criteria. This reasoning is not set out in the Space Act or the Explanatory Note as such, however, this will be impliedly required if a State wishes to support activities by operators not capable of fulfilling each and every criterion. In such case it will need to assume a certain level of risk itself.

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[45] Sofia Model Law, Art. 2.

[46] For the purposes of transparency and completeness, governmental entities are also caught by the licensing requirement but for the activities carried out by the Finnish Defence Forces as stated in Art. 3 of the Space Act.

Secondly, Article 5 of the Space Act states that the operator needs to submit a risk analysis for the mission as part of the application process. Any licensed space activity is not permitted to cause particular risk to people, property or public safety. The risk assessment is further specified in Article 2 of the Decree and the level of acceptable risk is decided on a case-by-case basis. The requirement for safety of the mission is further elaborated in Article 9 of the Space Act, which clearly states that the space activities have to be conducted in a safe manner. In its current form, the licensing conditions concerning safety of operations relate mostly to satellite operations but may extend in the future also, for example, to other types of space exploration, which are recognized in the Explanatory Note, especially in Article 10 with regard to sustainable uses of outer space. It should be noted that especially in the new spacefaring States there may not be the required level of independent technical expertise available to assist the State in the evaluation of the risks pertaining to each mission. For this reason, it is recognized in the Explanatory Note on Article 17 that the State may reach out for example to ESA or other prominent organizations for assistance with the technical assessment of the planned space activity.

Thirdly, in accordance with the desired sustainability approach, mitigation of space debris and minimizing adverse impacts of its mission to the Earth, atmosphere, and the outer space are set out as preconditions of the license. In connection, the operator is also required to submit its plans concerning the end of its mission. In the Explanatory Note, these deliberations include issues such as disposal of the satellite and possibilities for secondary mission use.

Fourthly, the license requires that the operator shows that its space activities are in accordance with the international obligations of Finland. According to the Explanatory Note, this includes for example, issues arising in connection with the radio license and export control. With regard to both of these regimes, the operator needs to demonstrate that it has complied with the relevant requirements. As these processes may take some time, it is understood that the operator may submit, together with its license application, proof of commencement of the relevant processes, even if the final decision is not yet awarded. The license shall however, be granted subject to conditions until final approvals by the relevant authorities are submitted by the operator and the license conditions are accepted as completed by the Ministry.

Finally, for the operator to be granted a license, it needs to hold third party liability insurance in compliance with Article 8 of the Space Act. The requirement to obtain insurance may be waived on a case-by-case basis based on risk analysis and other conditions. For example in accordance with the Explanatory Note, the insurance requirement may be waived for short-term small satellite missions and in cases where the launch service provider's insurance covers for launch and one year on-orbit. Any waiver decision shall be made based on a comprehensive analysis and the Ministry may request opinions from third party experts in support of its decision-making.

Based on the above conditions for a license, it is noted that Finland, like most European States having national space legislation, recognizes that there is also a need to cover the liabilities arising in-orbit by having an adequate insurance scheme in place.[47] The insurance requirement was deemed to be necessary in the Space Act in order to mitigate the liability of the State, but the possibility to waive the requirement based on overall risk assessment shows that the State is able to assume some of the risks involved to balance the obligations of the operators and in this way, support the growth of the space sector. As noted above, the Explanatory Note recognizes that it may be possible for the launch provider's insurance to cover for the initial phase for the mission, and which may be enough to cover for the short duration of many of the small satellite missions in the lower orbits. In practice, the cost of insurance premiums may prove to be too high for the start-up's or scientific institution's mission, in which case a waiver of the insurance requirement is needed if the State wants to enable such activity.

The insurance requirement is specified in the Decree. In accordance with Article 5 of the Decree, the required insurance shall at least cover launch and related operations until the space object is in-orbit. Article 5 of the Decree further states that the insurance requirement for on-orbit operations may be waived in case the risk of collision with another space object is lower than 1/1,000. For end-of-life phase, insurance is not required in case the risk of the space object reaching the Earth is lower than 1/10,000. It is expected that the operator will be required provide the calculus and the method used in its license application and these shall be verified by the Ministry as part of the license review. The approach of incorporating a reference to specific figures can be said to create legal certainty as to the requirements of the law, but as always with novel approaches, its practical application and success shall be seen once implemented.

5.3 Environmental provisions and space debris

The protection of the space environment, including removal and mitigation of new space debris, is a growing concern. The corpus of international space law does not address these issues in detail, but a substantial number of so called 'soft law'[48] mechanisms have been developed with this aim.

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[47] C. Gaubert, *Insurance in the Context of National Authorisation*, in *National Space Legislation in Europe: Issues of Authorisation of Private Space Activities in the Light of Developments in the European Space Cooperation* 166 (F. G. von der Dunk ed., Brill 2011).

[48] For the purposes of this article, soft law shall be taken to mean legally non-binding international instruments, which do not create a formal source of international law in accordance with Art. 38(1) of the Statute of the International Court of Justice (entered into force 24 Oct. 1945); *see* e.g. Irmgard Marboe, *The Importance of Guidelines and Codes of Conduct for Liability of States and Private Actors*, in *Soft Law in Outer Space: The Function of Non-Binding Norms in International Space Law* 119 (I. Marboe ed.,

Even if not specifically stated in the Space Act, the issues concerning climate change and environmental protection are high on the political agenda in Finland not only because of the increased uses of the Arctic environment, but also because mitigation of space debris can be said to be based on more profound incentives: outer space will not be available for space activities, including those of a private and commercial in nature, if it is congested with inactive satellites and other debris. Additionally, removal and prevention of space debris can be seen as interesting business opportunity, and thus enhanced protection through regulation may also foster creation of new private endeavours as well as promote investment in enabling technologies, in this way supporting both of the external goals of the national space law.

With its grounding in Article IX of the Outer Space Treaty, which inter alia provides a general prohibition on the contamination of outer space, Article 10 of the Space Act voices a general obligation to conduct space activities in an environmentally sustainable way, promoting the sustainable use of outer space. What is specifically required is that the operator makes a prior estimate of the environmental effects of its space activities. The reach of these effects stretches from the Earth and its atmosphere to outer space. The requirement on the operator is to plan and take any necessary actions to avoid, or to diminish, any adverse impact on environment caused by its space activities. In accordance with the Explanatory Note on Article 14, the obligation under Article 10 includes a duty to report to the Ministry on yearly basis on the activities taken or impact noticed. Even if certain other national laws have already adopted similar measures to protect the outer space environment,[49] the requirement to first plan and then report the activities is clearly a step towards ensuring that the activities are carried out in a deliberated manner. It can also be submitted that the operator is in a better position to argue that it has acted diligently in the conduct of its space activities with regard to the sustainability requirement, if it has first submitted a plan and then adhered to the plan, as evidenced by its yearly reporting.

More precisely with regard to space debris, the operator 'shall seek to ensure that space activities shall not create space debris'[50] and to follow the international codes of conduct in this respect. It is further recognized in the

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Wien: Böhlau Verlag 2012); Setsuko Aoki, *The Function of 'Soft Law' in the Development of International Space Law*, in *ibid.*, at 58.

[49] In the light of s. 3.1 above, *see* e.g. the Austrian and Danish Outer Space Acts.

[50] The wording of this provision in Art. 10 can be said to be a compromise solution between the promotion of the values contained in the various non-legally binding international guidelines and the consequential technical and economic responsibility placed on the operators. The resulting language is not absolutely clear as to the obligation imposed on the operator, especially looking at it from the traditionally formalistic view of the national legislations calling for unequivocal and comprehensive wording of legal norms.

Explanatory Note that there is no uniform international definition of space debris. Guidance in this respect should be sought in the international debris mitigation guidelines. The Explanatory Note mentions those adopted by Inter Agency Debris Coordination Committee (IADC)[51] and International Standardization Organization (ISO),[52] as well as the European Code of Conduct for Space Debris Mitigation promoted by European space agencies,[53] and the COPUOS Space Debris Guidelines,[54] but does not declare the list to be exclusive or exhaustive. It is noteworthy that it is specifically mentioned in the Explanatory Note, and in Article 3 of the Decree, that it is presupposed that the operators should adhere to the twenty-five-year rule contained in the IADC Space Debris Guidelines meaning, in accordance with the provisions referred to above, that the operators 'shall seek to ensure' the safe return of space objects within twenty-five years from the end of their functional lifetime.[55] Despite the certain compromises made in the textual formulation of the provisions, the take-away obligation is part of the binding norms for the Finnish operators even if currently there is no (formal) obligation under international law to remove non-operational satellites in-orbit.[56]

5.4 Liability and the state's right of recourse

Article 7 of the Space Act specifically recognizes in its first paragraph that in case a space object – not space *activity* – causes damage, compensation shall be paid by the State. The Space Act uses in Article 7 the same categorizations of damage as the Liability Convention in dividing it into property or personal damage occurring on the Earth or to an aircraft in flight, or elsewhere.[57] Moreover, it is stated in the Explanatory Note that the definition of damage in Article I of the Liability Convention is perceived to be the same as in the Finnish Tort Liability Act.[58] What is however different is that the indemnification obligation in the Space Act is not limited to damage caused by (the

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51 IADC Space Debris Mitigation Guidelines, IADC-02-01, Revision 1 (Sept. 2007).
52 ISO 24113:2011, *Space systems – Space debris mitigation requirements*.
53 European Code of Conduct for Space Debris Mitigation (28 June 2004).
54 Space Debris Mitigation Guidelines of the United Nations Committee on the Peaceful Uses of Outer Space (A/62/20) endorsed by General Assembly Resolution 62/217 (21 Dec. 2007) (A/RES/62/217), http://www.unoosa.org/pdf/publications/st_space_49E.pdf (accessed 7 Oct. 2017).
55 The information is also included in the national mechanisms for Finland in the *Compendium of Space Debris Mitigation Standards Adopted by States and International Organizations*, http://www.unoosa.org/documents/pdf/spacelaw/sd/Finland.pdf (accessed 8 Mar. 2018).
56 Lotta Viikari, *Environmental Aspects of Space Activities*, in *Handbook of Space Law* 735 (F. G von der Dunk & F. Tronchetti eds, Elgar 2015).
57 Liability Convention Arts II–III.
58 Vahingonkorvauslaki (412/1974) ('Tort Liability Act').

operator's) space object to third parties under the generally understood meaning of the Liability Convention, but by *any* space object to Finnish citizens.[59] In accordance with the Explanatory Note, the obligation towards Finnish citizens does not however extend to damage sustained by the operator itself. This is taken to refer to situations where the operator is the cause of damage under this provision and not the citizen claiming for compensation.[60]

In accordance with the first paragraph of Article 7, the State shall be the primary payer in case the space object causes damage to a third party, this time including Finnish citizens. The second paragraph of Article 7 states that the State has a right of recourse towards the operator, provided that the operator would be liable to pay compensation to the victim under the Tort Liability Act. The overreaching principle underpinning these provisions in Article 7 is that the State shall pay any damages it is obligated to pay under its international obligations, but it may then have the possibility to recover the compensation paid under those conditions from the operator, but such right of recovery, and the operator's corresponding liability to compensate, shall be subject to provisions of Finnish law.

It should be noted that the Space Act does not clarify how the legal duty of the State to compensate personal or property damage caused by a space object to Finnish citizens is interlinked to the Liability Convention rules as the source of this obligation. It may be recalled that the Liability Convention specifically excludes the launching State's liability to its citizens.[61] The rationale of the primary duty of the State to compensate Finnish citizens for the damage caused by space objects in the Space Act, is explained very briefly in the Explanatory Note with reference to the Government's proposal on the Act on Rescue and Return, advocating the idea that it is reasonable that the home State shall compensate for the damage caused by a space object to its citizens.[62] Including this principle in the Space Act can be said to be a political choice at national level to put citizens in a better position even if the State, and its citizens, are now taking part in such ultra-hazardous activity, or exactly because of that reason. The State extends its protection to damage caused by a space object, but the right of recourse is naturally only applicable to those who the Finnish operators would be liable towards under the Tort Liability Act.

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59 In the Explanatory Note on Art. 7, reference is made to 'home State' and 'damage caused to a citizen', thus in the absence of any further clarification, the obligation of the Finnish State to compensate is understood to be directed to the Finnish citizens; *see* the Belgian Act on the Activities of Launching, Flight Operation or Guidance of Space Objects, Art. 15, ss 1–2 (17 Sept. 2005).

60 An interesting theoretical question is: Can this liability extend to damage between two space objects for which Finland is the launching State?

61 Liability Convention Art. VII; *see* e.g. Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making* 126 (Sijthoff 1972).

62 Government's proposal on the Act on Rescue and Return no. 30/1970.

In accordance with the third paragraph of Article 7, in case damage is caused on the surface of the Earth or to an aircraft in flight, including its personnel or passengers, the State has the right of recourse even if the operator would *not* be liable to pay compensation to the victim under the Tort Liability Act, thus establishing an absolute liability for these types of damage. It can be said that the reference to the Tort Liability Act is in fact a reference to the operator's standard of behaviour, as is the case with the same category of damage under the Liability Convention. In relation to any other damage, liability incurs only if the operator has acted deliberately or negligently.[63]

According to the fourth paragraph of Article 7 of the Space Act read together with the third paragraph, the operator's liability and the State's right of recourse is limited to sixty million Euros, this is the case with regard to personal or property damage caused on the surface of the Earth or to an aircraft in flight, provided that the operator has not breached the terms of the license or the law. Limiting operator's liability for the most serious consequences of damage may at first be surprising. In the Liability Convention the absolute liability of States for these types of damage is premised in the protection of the victim. The State has to compensate the third party victim for personal and property damage caused by its space object. As the third party has not consented to taking part in ultra-hazardous activities, this liability is absolute, whereas for damages taking place in outer space, both parties have taken a certain level of risk in taking part in space activities, and it is reasonable that liability is limited by the requirement of fault.[64] The logical premise in the Space Act between the State and the operator is somewhat different. For damage imposing absolute liability, the State shall bear the remainder of the risk following from its decision to license the space activity, unless the operator has breached the Space Act or the license. In case of damage occurring in outer space, the operator's liability and right of recourse is not limited to any amount. In such case the only limitation is that liability will only follow if it is found that the operator is liable for the damage under the Tort Liability Act. Thus, it can be said that in such case the focus in finding the operator's liability or State's right of recourse under the Space Act is in the behavioural element of the operator.

The threshold between an accident and negligent behaviour is in many cases onerous. Similar to the Liability Convention, the Tort Liability Act does not specify what shall be required for a person, or in our case, person engaged in space activities,

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[63] It should be noted that Art. 7 of the Space Act refers in its para. 2 to the Tort Liability Act as a whole and in para. 3 only to 'deliberately or negligently', thus not to other conditions included in the Tort Liability Act, such as causality.

[64] Lesley Jane Smith & Armel Kerrest, *Liability Convention Article III*, in *CoCoSl* vol. II, 100–102, 116, 125 (S. Hobe, B. Schmidt-Tedd & K-U. Schrogl eds, Köln: C. Heymanns 2013).

to be diligent.[65] As the purpose of this article is not to delve into the specifics of Finnish tort liability, it can be said that at a general level, there are various ways of defining negligent behaviour under Finnish law. For example, through analysing whether the actor has taken an unacceptable risk.[66] Usually, in finding this, one would need to look beyond norms, namely also to other standards that are usual in the field of operation. In this context, the Explanatory Note concerning Article 7 makes reference to the activities that the operator has taken to minimize or remove risk of damage. In the Explanatory Note, it is stated that adherence to international guidelines on space debris mitigation can be taken into account as a sign of diligent behaviour. Additionally, it is mentioned that in deliberation, reference could be made to how the operator has first acknowledged and then minimized the identified risks in its activities. In general it can be said that even if references to risk awareness and implementation are rather vaguely put, an operator active in the space domain would usually be aware of the issues involved. However, with regard to adherence to space debris mitigation guidelines, it becomes more complex as there are various international guidelines with somewhat differing contents, even in addition to those expressly mentioned in Article 7.[67] The list is not exclusive or exhaustive, and thus other issues will be taken into consideration, but, these elements will likely bear some relevance in any deliberation concerning the standard of care in the Finnish space activities.

5.4[a] *Liability, right of recourse and international soft law*

Those international standards referred to above in connection with space debris mitigation, are recognized in the Explanatory Note to be legally non-binding, soft law obligations to the States. As these rules are not legally binding on the States, the most notable consequence of non-adherence is loss of trustworthiness amongst peers.[68] This is an important consequence to many States and international organizations of good standing, but it may be asked what is the importance to a company which may be more occupied by other issues in the conduct of its daily operations? However, it has been submitted that there is a general willingness by the developers to follow the guidelines.[69] In case such aspiration is stemming from self-regulation or even based on customer requirements, it may in practice lead into more concrete results as the cost of compliance can be better reflected in the end-user pricing.

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65 Pauli Ståhlberg & Juha Karhu, *Suomen Vahingonkorvausoikeus* 81 (6th ed., AlmaTalent 2013).

66 *Ibid.*, at 97–98.

67 *See* above in s. 5.3.

68 In this context, *see* e.g. Marco Ferrazzani, *Soft Law in Space Activities – An Updated View*, in *Soft Law in Outer Space: The Function of Non-Binding Norms in International Space Law* 102 (I. Marboe ed., Wien: Böhlau Verlag 2012).

69 Werner Balogh, *Role of Binding and Non-Binding Norms in the Implementation of Small Satellite Programmes*, in *ibid.*, at 338.

A national space law like the Space Act brings the binding nature of international soft law to a different level as, in accordance with the Explanatory Note, adherence to the international debris mitigation standards may be taken into account in determining whether the operator has acted diligently, and may consequently act as proof of non-negligent behaviour should the space object of the operator cause damage to another space object in outer space.[70] Thus, Finland has taken positive steps in its national law, recognizing that non-compliance by its operators with the international standards, including those recommended by the UN, is a factor that could be taken as an indication of fault in determining liability in accordance with the UN Space Treaties.[71] However, the primary means to justify the State's recourse is based on the operator's fault, a concept to be interpreted in accordance with the legal terminology and norms in the applicable national law, in this case the Tort Liability Act, covering the relationship of the operator and the State. As noted, the application of these regimes may lead to different outcomes in determining the State's fault at the international level, and the operator's fault at the national level.

As such international soft law rules are not created to be legally binding on the States, should they be considered to be binding on private operators? As the list in the Space Act is not exclusive or exhaustive, what is the extent of the requirement: does the obligation extend to all of the soft law instruments dealing with space debris, or just to some of them? Is there an order of precedence between the various sources and what should be drawn from the fact that the twenty-five-year rule is specifically mentioned in the national law even if it does not appear in all of the international guidelines? Is it meant that the operator needs to adhere to the entire text of the guidelines, or just certain paragraphs? Which existing or new instruments should be included, taking into account, for example, the work carried out at the level of the COPUOS Scientific and Technical Subcommittee with regard to Long Term Sustainability guidelines?[72] It also is noteworthy that the above indication of fault contained in the Explanatory Note is the single reference to any standards to be used in determining whether the operator has been at fault for the unlimited liability for damage caused in outer space to apply. Any other indicators shall be found from the applicable national (private) law.

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[70] On the relevance of the international space debris mitigation guidelines, *see* e.g. Ulrike Bohlmann, *Connecting the Principles of International Environmental Law to Space Activities*, in *Proceedings of the International Institute of Space Law 2011* 301–310 (C. M. Jorgenson ed., Den Haag: Eleven International Publishing 2012); Viikari, *supra* n. 56, at 741–746.

[71] *See* set of questions provided by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, taking into account the UNISPACE+50 process, http://www.unoosa.org/res/oosadoc/data/documents/2017/aac_105c_2tre/aac_105c_22017trel_1_0_html/AC105_C2_2017_TRE_L01E.pdf (accessed 10 Nov. 2017).

[72] COPUOS, *Guidelines for the Long Term Sustainability of Outer Space Activities*, A/AC.105/C.1/L.362 (21 June 2017), http://www.unoosa.org/res/oosadoc/data/documents/2017/aac_105c_1l/aac_105c_1l_362_0_html/AC105_C1_L362E.pdf (accessed 11 Nov. 2017).

Despite the various questions arising with regard to international soft law rules on commercial and private activities, the principle of protecting the outer space environment, including space debris mitigation, is a principle that should be appraised by all actors, at all levels.

5.5 Transfer of space objects or space activities

In accordance with Article 11 of the Space Act, transfer of space activities authorized through the Space Act requires prior authorization from the Ministry, as the license is non-transferable. Also, transfer of (ownership) of a space object, as well as ownership in the operator company resulting in change of 'effective control' over the space object or the space activity, is subject to prior approval by the Ministry.

It is clear that in case the space activities are transferred to another operator, the new operator needs to undergo the same scrutiny as the original operator during the licensing process. With regard to the transfer of space object, the rationale lies in the idea that an owner of an object usually also has control over the activity which the object is used for. However, this assumption does not hold true in all cases today, valuable assets are not always owned by the party who is conducting it. An everyday case is a car or an airplane, but satellites are also increasingly subject to different ownership and financing arrangements.[73]

Thus, it may well be that the operator does not own the space object; ownership as such is not an activity that needs to be licensed under the Space Act. Ownership is also not a condition recognized as affecting the State's responsibility or liability under the UN Space Treaties.[74] However, as the notion of ownership usually implies some control over the object,[75] any changes in the ownership possibly having effect on the licensed space activities are, in accordance with the Space Act, subject to the Ministry's prior approval as specifically recognized in Article 11. The term used in Article 11 is 'effective control', but the term is not defined in more detail in the Explanatory Note. As 'effective control' is not defined, the practice will show what kind of changes and financing arrangements will be caught by this provision.

In considering the authorization to transfer the license to another operator, the Ministry would take into account the licensing conditions set out in Article 5 of the Space Act, thus requiring that the new operator would need to comply with the same licensing terms as the previous operator. In

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[73] On the history of 'Satellite as a commercial commodity' Frans von der Dunk, *Transfer of Ownership in Orbit: From Fiction to Problem*, in *Ownership of Satellites: 4th Luxembourg Workshop on Space and Satellite Communication Law* 29–31 (M. Hofmann & A. Loukakis eds, Hart 2017).

[74] *See* e.g. Mahulena Hofmann, *Ownership of Satellites: A Simple Legal Fact with Complex Consequences*, in *ibid*., at 17.

[75] von der Dunk, *supra* n. 73, at 34.

accordance with the Explanatory Note, in case the transfer of operation to another owner or operator would necessitate a bilateral agreement between Finland and the receiving state, relieving Finland from any of its international obligations, the conclusion of such an agreement could be included as a precondition to the Ministry's authorization to transfer.

5.6 Suspension, amendment and withdrawal of the license

To ensure that the rules set out in the Space Act are truly adhered to by the operators, Article 13 of the Space Act contains a provision stating that the Ministry may withdraw or amend a license. This can be done in case the license application or its annexes contain false or imperfect information that has influenced the process in a material way – the operator no longer fulfils the licensing criteria; or the operator has breached the terms of the license.

In case the license is withdrawn, the Ministry may also order the operator to transfer the space activities to be carried out by another operator. In practise, the primary method of dealing with any such situation is however, negotiations between the operator and the Ministry to ensure a safe and legitimate way to proceed with the on-going space activities.

5.7 Sanctions for non-compliance

Articles 19 and 21 of the Space Act set out certain provisions concerning non-compliance with the Space Act. In accordance with Article 19, the Ministry is granted with powers to impose a conditional fine to ensure the operator's obligations under the Space Act are followed.

In Article 21 of the Space Act a new form of offence is created: violation concerning space activities. The characteristics of this offence include intentional or grossly negligent activities or omissions that are more than minor in significance, by which a natural or legal person either carries out space activities without a license, or an operator fails to take out third party liability insurance as required by virtue of Article 8 of the Space Act, or fails to provide information in accordance with Article 12 or 14 of the Space Act dealing with the authority's right to have required information on the space activities in order to be compliant with its international obligations of continuous supervision. The offence of violation concerning space activities is punishable by a fine, unless there is a more severe penalty prescribed for the said offence elsewhere in Finnish law, such as the Criminal Code.[76]

[76] Rikoslaki (39/1889) ('Criminal Code').

Article 21 of the Space Act incorporates provisions of the Criminal Code in dealing with penalties flowing from registration offences, from providing false documents to a public authority, and fraud. Such listed offences are subject to fines or imprisonment depending on the degree of severity of the activity. None of the penalties referenced in the law are likely to lead to imprisonment but are rather confined to the imposition of monetary sanctions for non-compliance with the Space Act.

6 CONCLUSION

The Space Act can be welcomed as a new addition to both Finnish legislation and to the body of European national space law. It may be recalled that the aim of the Finnish national space law was to foster private space activities and the sustainable use of outer space, as well as to deal with the State's international obligations at the national level. Even if regulation and support of private activities may at the outset come across as a misnomer, in the case that the regulation achieves the goal of providing legal certainty, a level playing field and a framework which supports innovative technologies, the law can act as a tool to foster growth of private activity. In the author's view, this goal has been in many respects achieved in the Space Act.

Space sustainability is definitely an aim to be supported, but whether it should be achieved through imposing rules on operators through national legislation flowing from legally non-binding international guidelines, can be debated, especially in relation to liability. Including space debris mitigation measures and general principles concerning the environmental protection of the Earth, the atmosphere, and outer space, supports the initial notion of getting the operators to act in an environmentally friendly manner in minimizing the impact of their space activities. However, it remains to be seen how this obligation will be practically implemented, especially in connection with national rules on tort liability.

Enacting legal provisions by the State in order to ensure that its international obligations are adhered to, and trying to agree on the division of monetary issues flowing from compensation for damages, is in general good handling of State affairs. As however, the international and national frameworks differ in terms of liability, and the rules may lead to different outcomes, it may be that the State is not able to recover the damages paid in international arena from the operator at the national level as expected. Therefore, the approach taken by the Space Act in trying to minimize the occurrence of damage through a careful review process, is likely to be the most efficient way of dealing with the issue of damages.

In short, the Space Act fulfils at a general level those aims set for the process, and includes all elements of modern national space law. Its implementation will finally show how these objectives can be applied in practice.